8. City of Glendale

The City of Glendale is located in the western part of the SRV, east of the White Tank Mountains and Agua Fria River. Glendale, which is located in Maricopa County, is Arizona's fourth largest city, and is the commercial, educational and industrial hub of the Phoenix area. Glendale has a dynamic market with fast and cost-efficient travel, which makes it a prime location for Arizona business. The City of Glendale enjoys a widely diversified economic base that includes manufacturing, service sector, aerospace, communications, precision metal working and casting, chemicals, electronics and warehousing industries. The Glendale MPA is located north of Camelback Road, west of 43rd Avenue, east of Perryville Road, and south of Northern Avenue and Pinnacle Peak Road.

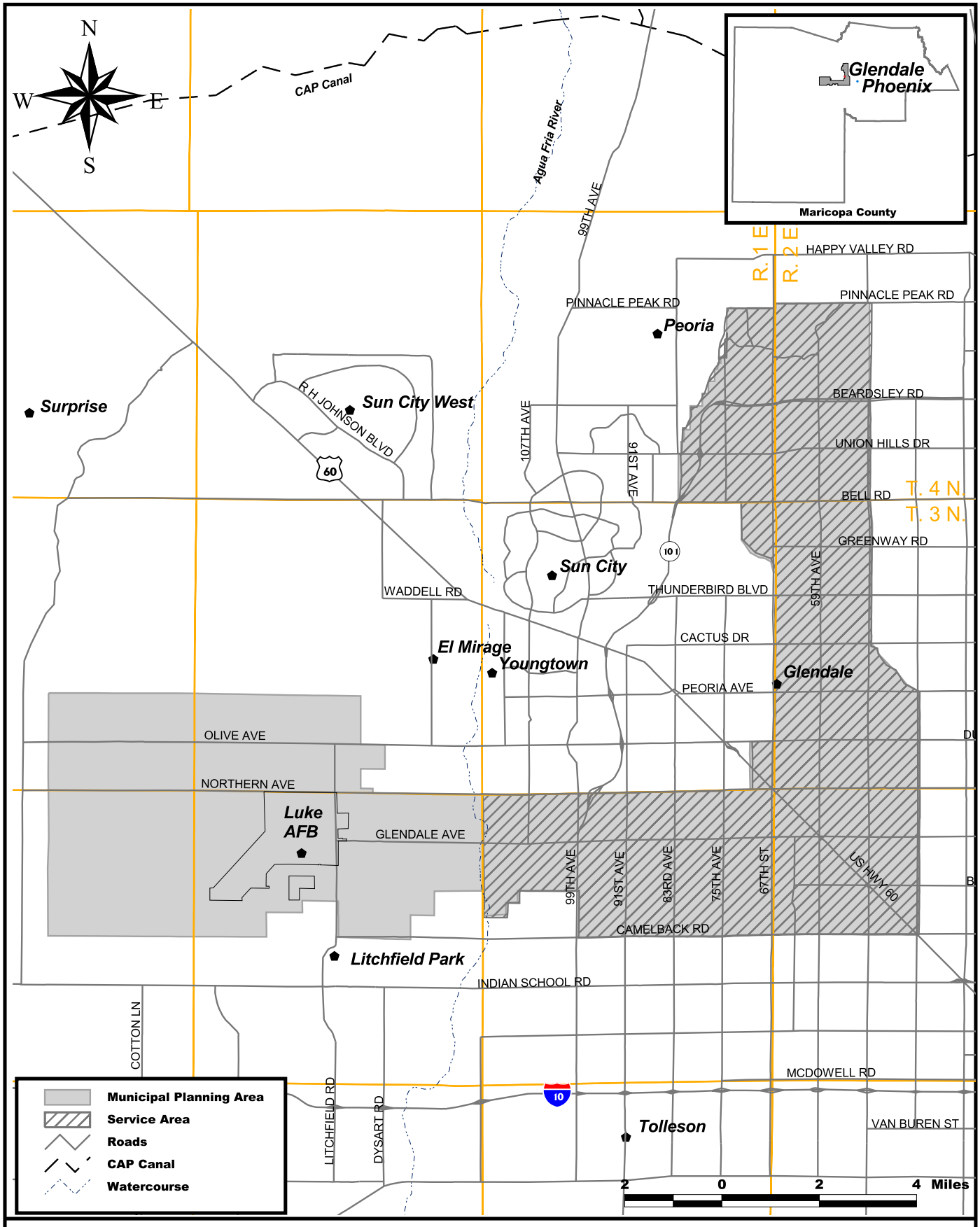
According to the ADWR Annual Water Withdrawal and Use Report, in the City of Glendale in 1998, a total of 41,372 af of water were produced and delivered. Of that total, 2,345 af were pumped from groundwater; 13,805 af were received from CAWCD (including 3682 af from the SRPMIC Settlement, i.e. 3,000 af from Wellton-Mohawk Irrigation and Drainage District (WMIDD) and 682 af from RWCD); and 25,223 af were surface water received from the SRP. Approximately 62 af of water were delivered to other users leaving 41,311 af of water to be used by the City of Glendale.

A. Plans to Take and Use CAP Water

The City of Glendale currently has a contract for 14,183 af of CAP water. The allocation includes a transfer of 100 af from the New River Utility Company. Under the Settlement Alternative, the City of Glendale would receive an additional 3,053 af of CAP water. That CAP water would be delivered for a 50-year contract period (i.e., from 2001-2051). The CAP water would be used to supplement both current and projected water supply demands over the next 50 years and would help reduce the continuing dependence on pumping groundwater from an overdrafted groundwater system. Table L-M&I-45 outlines the proposed allocations by alternative.

Table L-M&I-45
CAP Allocation Draft EIS
City of Glendale – Proposed CAP Allocation

Alternative	Allocation (in afa)	Priority
Settlement Alternative	3,053	M&I
No Action	0	-
Non-Settlement Alternative 1	3,053	M&I
Non-Settlement Alternative 2	0	-
Non-Settlement Alternative 3A	0	-
Non-Settlement Alternative 3B	3,340	NIA
Existing CAP Allocation	14,183	-



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

CAP Allocation Draft EIS
General Location Map
City of Glendale

June 2000

Figure #L-M&I-23

Figure L-M&I-23 show both the service area and MPA for the City of Glendale. The service area covers approximately 34,893 acres, and the MPA is approximately 58,949 acres. The City of Glendale has three water treatment plants. The Pyramid Peak Water Treatment Plant currently treats CAP water and has a capacity of 16,800 afa. The Cholla Water Treatment Plant treats SRP water and has a capacity of 33,600 afa. CAP water could be wheeled through the SRP system to this water treatment plant. Long-term plans to expand the facilities include adding 12,300 afa of capacity to the Pyramid Peak Plant and adding 13,400 afa of capacity to the Cholla Plant. Once these additional expansions are completed, no additional facilities would be required for taking and treating the additional CAP allocation (Kukino 2000).

B. Population Projection

The population in 1985 for the City of Glendale was 23,895. The estimated 2001 population level is 216,843 and the estimated 2051 population level is 341,189.

C. Water Demand and Supply Quantities

As previously shown in Appendix C–M&I Sector Water Uses, it is estimated that water demand in the City of Glendale would increase from 44,182 af in year 2001 to 69,518 af in year 2051. The projected water uses both by water source and alternatives are provided below in Table L-M&I-46. Based on anticipated water demands, the CAP water which would be allocated under the Settlement Alternative would provide seven percent and four percent of the current estimated water supply required for the City of Glendale for the years 2001 and 2051, respectively.

Table L-M&I-46
CAP Allocation Draft EIS
City of Glendale – Projected Water Use

Alternative	Annual CAP Deliveries		Groundwater		Effluent		Other Surface Water*		Total Demand	
	2001	2051	2001	2051	2001	2051	2001	2051	2001	2051
Settlement Alternative	7,138	16,626	5,545	5,545	0	278	31,498	47,069	44,182	69,518
No Action	7,138	15,997	5,545	5,545	0	906	31,498	47,069	44,182	69,518
Non-Settlement Alternative 1	7,138	16,626	5,545	5,545	0	278	31,498	47,069	44,182	69,518
Non-Settlement Alternative 2	7,138	15,997	5,545	5,545	0	906	31,498	47,069	44,182	69,518
Non-Settlement Alternative 3A	7,138	15,997	5,545	5,545	0	906	31,498	47,069	44,182	69,518
Non-Settlement Alternative 3B	7,138	16,626	5,545	5,545	0	278	31,498	47,069	44,182	69,518

* SRP and other ID water
Note: A more detailed breakdown of supplies may be found in Appendix C.

It is estimated that the demand for water at the end of the CAP contract period would be approximately 69,519 af. For all alternatives, there is estimated to be no unmet demand with or without the CAP allocation.

D. Environmental Effects

The following sections include a general description of existing conditions relating to land use, water resources and socioeconomics for each entity. The following summaries also include a description of the existing conditions and brief description of the impacts to biological and cultural resources that would result from the construction of CAP delivery facilities and conversion of desert and agricultural lands to urban uses.

1. Land Use

According to data from MAG, the land use designations in the City of Glendale MPA in 1995 consisted of approximately 19,532 acres of agriculture, 25,702 acres of developed land, 3,332 acres of rural land, 9,524 acres of vacant land and 859 acres of water, including lakes, rivers and canals. As described in the introduction to this appendix, the 1995 MAG categories were redefined into three new categories (i.e. agriculture, desert and urban). These 1995 data were also updated and adjusted based on reviews of the 1998 aerial photography and the field surveys that were completed to assess biological resources for this EIS. Table L-M&I-47 provides the projected acres of land within the City of Glendale MPA that are agriculture, desert or urban and the number of acres expected to change from the existing category for the years 2001 and 2051.

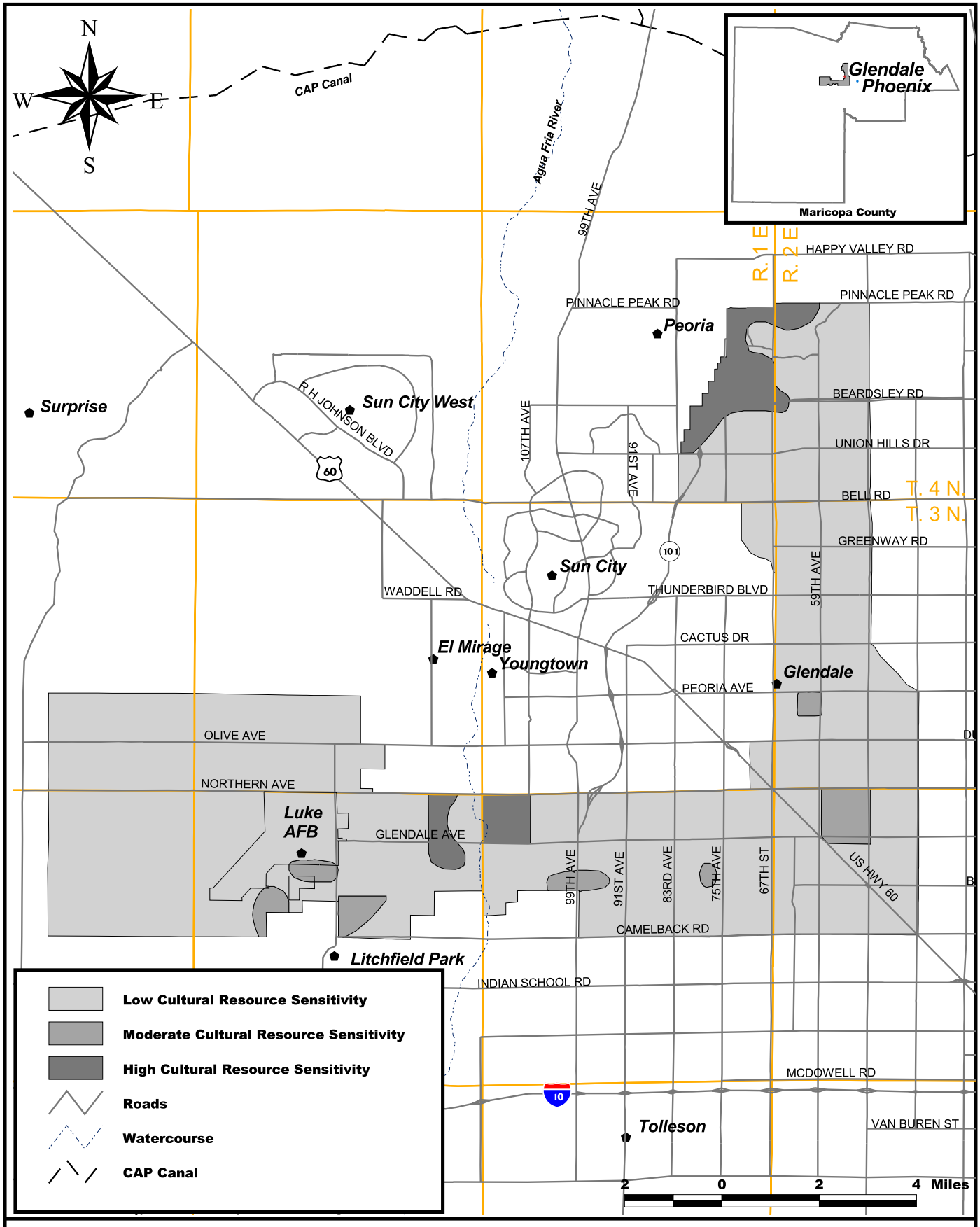
Table L-M&I-47
CAP Allocation Draft EIS Appendix L
City of Glendale – Projected Land Use Changes Within the Service Area (in acres)

Alternative	Year	Agriculture	Agriculture Urbanized	Desert	Desert Urbanized	Urban	Changes to Urban Acreage
Settlement Alternative	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641
No Action	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641
Non-Settlement Alternative 1	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641
Non-Settlement Alternative 2	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641
Non-Settlement Alternative 3A	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641
Non-Settlement Alternative 3B	2001	11,520	--	4,632	--	42,797	--
	2051	1,879	9,641	4,632	0	52,438	9,641

2. Archaeological Resources

Most of the surveys that have occurred within the City of Glendale MPA have been linear; very few moderate-sized (<640 acres) block surveys have taken place. Only one survey is recorded for the southwestern portion of the MPA; although this area is currently being used for agriculture, intact subsurface remains are still possible, as suggested by the areas of moderate cultural resource sensitivity that have been identified in the vicinity (e.g., AZ T:7:68(ASM)). In the northeast portion of the City of Glendale MPA is an area of high cultural resource sensitivity; numerous prehistoric sites ranging from Archaic lithic scatters to Classic period Hohokam settlements have been documented here, and might be expected to occur in the surrounding areas. The Glendale Townsite/Catlin Court Historic District has been listed on the National Register since 1992 (Graham, Kupel, and Keeling 1997). Other historic resources include roads, commercial and residential structures, farmsteads, and water control features (e.g., the Airline Canal). The City of Glendale has a Historic Preservation Commission.

Cultural resource sensitivity areas in this entity are shown in Figure L-M&I-24. Based on the limited data used to generate the cultural sensitivity designations, the potential for cultural resource impacts in the City of Glendale MPA is low to moderate. Mitigation of cultural resource impacts due to urban expansion would be determined by local jurisdictions and development of applicable permit requirements (such as the CWA Section 404 permit). Impacts on cultural resources due to future land use changes would be identical for each of the five alternatives. Mitigation for such impacts would be dependent



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

CAP Allocation Draft EIS
Cultural Resources
City of Glendale

June 2000

Figure #L-M&I-24

on the requirements of the local jurisdiction. No new delivery facilities would be required for the additional CAP allocation, although future expansions of existing wastewater treatment plants are planned. Reclamation would determine the need for additional cultural resources compliance prior to water deliveries.

3. Biological Resources

Existing Habitats

Little natural habitat remains within the City of Glendale MPA (elevation approximately 1,200 feet). Most of the area has been developed for agriculture or urbanized. Some Creosote-bush Association remains where trees are sparse and saguaro density is low. Small patches of Blue Paloverde/Desert Ironwood Association and Velvet Mesquite Associations occur along drainages and areas where runoff collects. The habitat zones located in the service area are shown on Figure L-M&I-25. Table L-M&I-48 provides the habitat acreages for the habitat zones described above.

TableL-M&I-48
CAP Allocation Draft EIS
City of Glendale– Habitat Acreages

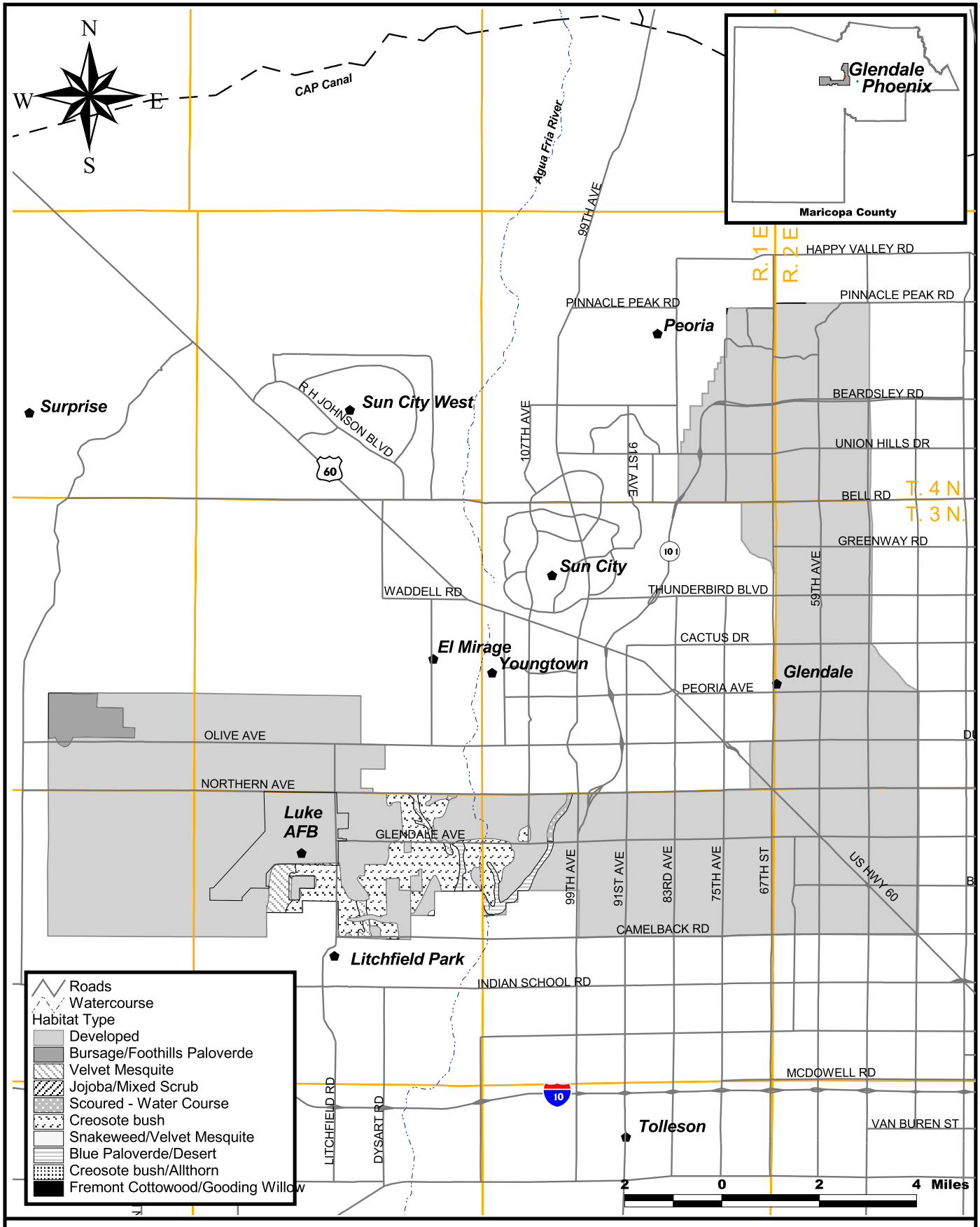
Vegetation Name	Acres
Developed	54,317
Bursage/Foothills Paloverde	860
Velvet Mesquite	465
Scoured, Washes and Creekbeds	104
Creosote-Bush	2,898
Blue Paloverde/Desert	305
Total	**58,949**

Impacts to Biological Resources

Under the No Action Alternative, urban growth within the City of Glendale MPA over the 50-year study period would result in additional loss of natural habitat. However, an estimated 9,641 acres of farmland would be urbanized. This urbanization of the farmland would result in the creation of fallow fields for some undetermined length of time. Fallow agricultural fields in the area may be used by burrowing owls, a species protected under the MBTA. Individual developers who convert fallow lands for urban uses would be responsible for ensuring burrowing owls are removed prior to development. Failure to do so would be considered a violation of the MBTA. Under the action alternatives, there is no difference in impacts from the No Action baseline. No new CAP delivery facilities would be required for the additional allocation. No significant impacts from wastewater treatment plant expansions are anticipated based on the small acreage required.

Potential T&E Species and Acres of Potential T&E Species Habitat

There is no potential suitable habitat for T&E species within the City of Glendale MPA.



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

CAP Allocation Draft EIS
Habitat Zones
City of Glendale

June 2000

Figure No. L-M&I-25

4. Water Resources

Demands in the City of Glendale have historically been met by pumping groundwater from the underlying basin fill and with SRP water. In more recent years, CAP water has been used to meet a portion of the demands. The City of Glendale is in an area of relatively intensive groundwater development, and substantial declines in groundwater levels have been experienced. These declines have resulted in subsidence in this area. The concentration of TDS in the underlying groundwater can be as much as about 1,000 ppm.

Estimated groundwater level impacts are summarized in Table L-M&I-49, which shows the estimated groundwater level change for the period from 2001 to 2051 as well as the groundwater level impacts or the difference between the change in groundwater levels for each alternative relative to the change for the No Action Alternative. The City of Glendale falls within three groundwater sub-areas used for the analysis. Table L-M&I-25 shows estimated groundwater conditions in the city from east to west. In general, groundwater level changes for the three areas considered are similar.

Groundwater levels would decline during the 2001 to 2051 period under the No Action Alternative, with the declines increasing from about 35 feet in the eastern part of the City of Glendale to about 150 feet in the western part. These declines reflect the continued reliance on groundwater to meet demands, both in the City of Glendale and in adjacent areas. The declines have been moderated by the impact of direct recharge of CAP water in the Agua Fria recharge facilities and in future west-side recharge facilities. Increases in TDS concentrations could occur due to both the northward movement of poorer quality water from the south and due to lowering of groundwater levels in the vicinity of the Luke salt dome. The lower groundwater levels could also result in continued subsidence, particularly in the more westerly parts of the City of Glendale.

Groundwater levels under the Settlement and all Non-Settlement Alternatives would also decline over the 2001 to 2051 period. These declines would generally be greater than the declines under the No Action Alternative and could result in additional subsidence relative to the No Action Alternative. The larger declines in groundwater levels are primarily a result of reduced direct recharge of CAP water in the Agua Fria River and future west side recharge facilities under the Settlement and Non-Settlement Alternatives relative to the No Action Alternative.

Table L-M&I-49 CAP Allocation Draft EIS City of Glendale–Groundwater Data Table		
Alternatives		
	Estimated Groundwater Level Change from 2001-2051 (in Feet)	**Groundwater Level Impact** (in Feet)**
No Action	-35/-136/-150	--
Settlement Alternative	-78/-198/-231	-43/-62/-80
Non-Settlement Alternative 1	-34/-147/-160	1/-11/-10
Non-Settlement Alternative 2	-44/-157/-172	-9/-21/-21
Non-Settlement Alternative 3A	-68/-185/-207	-33/-49/-57
Non-Settlement Alternative 3B	-65/-172/-202	-30/-36/-51

*****Values correspond to the Glendale/Peoria, West-side M&I, and MWD sub-areas, respectively, as discussed in Appendix I.

** Computed by subtracting the estimated groundwater decline from 2001 to 2051 for the No Action Alternative from the estimated change in groundwater level for the same period for the alternative under consideration. The estimated impact is considered to be more accurate than the estimated decline in groundwater levels

5. Socioeconomic

The same population growth is supported under all alternatives, including the No Action Alternative. However, the cost of providing water may vary by alternative. Costs were estimate, on a per af basis, of providing the proposed allocations and, in their absence, alternative water supplies. The alternative water supplies include joining the CAGRD and if needed, treating and reusing effluent. The difference in cost for this small increment of the City of Glendale's total water supply if considered insignificant. It should be noted that the increment of demand met by the proposed CAP allocation is approximately 4.4 percent of the total year 2051 demand for the City of Glendale.

Table L-M&I-50
CAP Allocation Draft EIS
City of Glendale –Cost of Potable Water for Additional Allocation Increment

Alternative	Cost of Water (per af)	Water Source
Settlement Alternative	154[a,b]	CAP Allocation
No Action	237[a]	Reclaimed Water
Non-Settlement Alternative 1	154[a]	CAP Allocation
Non-Settlement Alternative 2	237[a]	Reclaimed Water
Non-Settlement Alternative 3A	237[a]	Reclaimed Water
Non-Settlement Alternative 3B	154[a]	CAP Allocation

Notes:
a. Estimated average unit cost expressed in year 2000 dollars.
b. Does not include monetary contribution to the GRIC Settlement.